attempts to open the California telecommunications market (e.g. interLATA and intraLATA toll competition). Thus, she argues

> "...it is disingenuous at best for Pacific Bell to claim that one benefit of its entry into the video market would be responsive entry by cable operators into California local service markets." (p. 10)

21. Ms. Murray's recitation of rather old history notwithstanding, Pacific Bell has supported and does support competition in telecommunications, so long as there is an "even playing field." I myself have testified before the California PUC on behalf of the company to that effect, noting, though, that the CPUC should make changes in rate design and other regulations before opening up intraLATA and local exchange markets. Most recently, Pacific Bell has proposed that local exchange markets be opened, volunteering that, if appropriate conditions were adopted, it would unbundle its network to reduce entry barriers and increase competition. Ms. Murray's clients are among the companies that would benefit most from the adoption of that proposal, since cable systems operators could combine the switching resources of Pacific Bell with their own fiber-coaxial distribution plant to provide a range of voice, data and interactive broadband services.

22. Whether or not Pacific has supported or will support competition is, in any case, beside the point. Public policies toward competition have changed, and will continue to change.

Indeed, pending legislation in Congress would pre-empt state restrictions on local exchange competition. Entry of new carriers and expansion into new services by existing carriers has occurred and will continue to occur. Among the most active firms in this regard, are cable systems operators and their allies. As detailed in Appendix 2, cable operators are rapidly replacing and expanding their existing networks and increasingly offering services competitive to local exchange services. That being the case, it is disingenuous of Ms. Murray to argue that Pacific Bell should not be allowed into the video services market.

23. Finally, given Ms. Murray's reputation as a consumer advocate, I find her opposition to Pacific Bell's replacement of its existing outside plant and its entry into video services to be surprising, if not contrary to her prior positions. Is Ms. Murray taking the position that California consumers are better off with a single provider of cable television service? Does she believe that cable companies should retain their current monopoly position, with rates regulated by this Commission? Is it her view that monopoly franchise regulation of communications services is the best public policy for the California economy? If so, I could not disagree more strongly. The consumers of California -- and the workers of California -- will be best served by increasing competition in, thereby decreasing the need for regulation of, communications services. It is perfectly legitimate for consumer advocates to support consumer protection provisions, such as incremental price floors, to prevent cross-subsidies to Pacific Bell's video service

offerings. It is quite another matter to oppose competition itself, which is the net effect of Ms. Murray's opposition to Pacific Bell's broadband proposal.

C. Testimony of Patricia Kravtin

24. Ms. Kravtin bases much of her testimony and many of her conclusions on the same $16 billion mistake as Dr. Johnson, stating that the application confirms that Pacific Bell "intends to recover the overwhelming majority of its $16 billion in capital commitment from existing basic services." (p. 14) While I have not taken the time to detail each of the inferences drawn from this fundamental error in her testimony, it is clear that this overstatement of cost per home passed discredits her opinions that are based on that false premise.

25. Ms. Kravtin questions the value of Pacific's investment on the grounds that its HFC network "duplicates the upgrades that are currently under construction by many cable TV systems." (p. 3) Ms. Kravtin suggests that such "duplication" must be contrary to economic efficiency, and the Commission should therefore deny Pacific's application. Her position ignores the fact that competition, by definition, causes "duplicate" capital investment: when MCI and Sprint built long distance networks that "duplicate" AT&T's existing network; competitive access providers build facilities that "duplicate" those of the local exchange carriers. Of course, Pacific Bell's broadband network will "duplicate" cable

networks: how else can Pacific compete with them in providing video services to California consumers? Of course, that is just what Ms. Kravtin's clients are concerned about: the prospect of real competition in the market for video services delivery to California homes.

26. Ms. Kravtin asserts that Pacific Bell's claims of cost savings from the proposed HFC network are not valid since they replace existing distribution plant:

> "It is highly unlikely that any credible engineering economic study could conclude that replacement of in-place, fully functional copper distribution plant with a fiber/coax distribution network, for "telephony-only" service would suggest capital cost "savings" of 36% or, for that matter, any savings at all, since the capital costs of the plant that would be replaced are necessarily "sunk" and non-avoidable."(p. 5)

That argument is economic nonsense. By that standard, we would still be using manual typewriters and cross-bar switches. By that standard, no company would ever invest in new technology until the existing plant no longer functions or has, at least, been fully depreciated. The fact is that companies regularly replace existing plant, even though it has remaining physical life and has not yet been fully amortized. They do so for the most basic economic reason: the present value of the new investment, considering initial capital costs, reduced operating costs and increased

revenues, is positive. The adoption of new technologies almost always involves replacement of existing capital (e.g., replacing older personal computers with more powerful versions). This has certainly been true in telecommunications, where the adoption of new technologies has often involved replacement of plant in service, not yet fully depreciated (e.g., microwave transmission replaced existing copper wires; fiber optics replaced existing copper interoffice trunks). Were the Commission to heed Ms. Kravtin's advice uniformly, the people of the United States would find themselves communicating on the equivalent of unpaved roads, rather than the information superhighway! Of course, Ms. Kravtin only means to apply that new investment obstacle to telephone companies, since she acknowledges that cable operators are replacing and upgrading their existing plant, as detailed in Appendix 2.

27. Ms. Kravtin decries Pacific Bell's attempt to push most costs into common costs, claiming it is a typical LEC tactic. (p. 6) Although she concedes that this approach "has been used to estimate the incremental cost of providing those additional facilities needed to accommodate a new service overlaid on existing network resources," (p. 6) she states that this approach should not apply to new networks and, therefore, Pacific's proposal to do so is "outrageous." (p. 7) Ms. Kravtin's position is completely contrary to economic efficiency and sound public policy: it would

effectively deny customers any benefits of economies of scope from building and operating multiple use networks.[12] If, by deploying a multiple-use network Pacific Bell can provide both telephony and video services more efficiently than two stand-alone networks, it should be encouraged to do so. It is inherent to economies of scope that there will be common costs between or among the multiple services. That there are common costs among the multiple uses in a major source of the benefits of the new network.

28. Ms. Kravtin states that "of the total $16 billion... approximately $12 billion will come from depreciation charges taken against Pac Bell's embedded plant," (p. 15) implying that ratepayers are paying the cost of the broadband network. First, she has once again mistaken Pacific Bell's total capital budget with the cost of its proposed broadband deployment. Of the $16 billion total invstment, roughly $11 billion is being spent on the existing telephone network, deploying new switches, replacing worn-out copper and the like. Second, the cash flow generated by depreciation charges represents a recovery of capital previously invested by the shareholders of Pacific Bell. Consumers receive the benefit of the investment from the services provided by means of that investment; the recovery of the capital invested belongs to the shareholders. The company can and should decide what to do

[12] If Ms. Kravtin's position were applied to office equipment, she would, no doubt, have opposed the deployment of personal computers, on the grounds that their multiple-use capabilities (e.g., spreadsheets and word processing) was not fair to the manufacturers of dedicated word processors, such as Wang,.

with that depreciation cash flow on behalf of its shareholders: return it to shareholders as dividends; reinvest it in the business; or use it to enter new lines of business or enter other markets.

29. Ms. Kravtin takes issue with Pacific Bell's "break-even analysis" on the grounds that it "may be overly optimistic." (p. 10) Even if her numbers were correct, which they are not, Ms. Kravtin's concern is misplaced: the question is whether the proposed projects are financially viable, not whether Pacific Bell will earn high profits on its investments. There is an undeniable element of risk in making these investment commitments, just as there is risk in any investment commitment in a competitive market. It is for the shareholders of Pacific Bell to decide whether revenue forecasts are "overly optimistic," because they are bearing the risk of the investment. So long as basic telephone ratepayers are protected from that risk, it is clearly in the nation's and the state's interests tc allow Pacific Bell to take that risk.

30. Ms. Kravtin's empirical analysis of financial feasibility is also differs from Pacific's for three main reasons: she did not include any discussion of household growth; she assumed lower penetration rates; and she considered only current transport revenues in assessing the business case for Pacific Bell's video services.

a. Household growth is zero in her projections. She uses 1996 number of homes passed to estimate the revenue per subscriber from the 2003 revenue data. Pacific Bell assumed slight growth in the number of households, which yields slightly lower expected revenues per subscriber than those presented in her analysis.

b. Ms. Kravtin's penetration projections are considerably more conservative than Pacific Bell's. This difference is simply driven by her opinion on how successful Pacific Bell will be in drawing existing customers away from current providers. Ultimately, however, Ms. Kravtin's analysis pointed to current video programming transport costs in the order of $5 to $8 per subscriber and that Pacific would require close to 100% penetration of the homes it passed to achieve its projected revenue figures (p. 12).

c. This conclusion was based on the assumption that Pacific Bell will only realize analog video transport revenues. Ms. Kravtin did not consider the emergence and growth of transport revenues from other digital and video services such as multimedia databases, remote learning applications or interactive video applications (e.g., interactive games). Pacific Bell's forecasts do include revenues from transport of a number of different video services, not just basic analog video services.

31. Ms. Kravtin disputes Pacific Bell's argument that price cap regulation will prevent cross-subsidies from basic telephone rates to video services, because Pacific Bell has asked the CPUC for a reduction in its 4.5% X-factor to support infrastructure investment. This establishes, in Ms. Kravtin's mind, a "clear linkage between the annual rate of price changes for existing non-competitive (Category 1) services and the acquisition of new network assets." (p. 14) As I understand it, the costs and revenues for video services will be allocated to the Federal jurisdiction. Therefore, the intrastate rate base for price regulation, future x-factor determination and the earnings sharing provision will exclude all costs related to video services. Hence, there is no possibility of customers of intrastate telephone services subsidizing video services.

Conclusion

32. Upon review and careful consideration of the pleadings and expert testimony of those opposing Pacific Bell's applications, I reaffirm my opinion that Pacific Bell's integrated broadband network proposals are based on sound economic principles; are consistent with this Commission's video dialtone policy objectives; and, if approved by the Commission, will promote the national interest in advanced telecommunications and information infrastructure and services.

I declare under penalty of perjury that the foregoing is true and correct. Executed on February 26, 1994, at Emeryville, California.

Robert G. Harris

Declaration of Robert G. Harris
Appendix 1: Explanation of Dr. Johnson's $16 Billion Mistake, Based on Excerpts from His Testimony

1. Dr. Johnson fundamentally misunderstands Pacific Bell's explanation of its $16 billion capital investment over the next decade:

> "Notably, Pacific Bell describes its $16 billion investment as a '30 percent increase over past investment levels' (at 10). Since these past investment levels have included funds for network maintenance and improvement, we can reasonably presume that the investment level, in the absence of the 30 percent increase, would continue to include allowances for this function." (p. 20)
>
> "The $16 billion investment for just over 5 million homes will exceed the $14.6 billion value of all of the net plant recorded on Pacific Bell's books at the end of 1991!" (p. 41-42)

2. Dr. Johnson wrongly assumes that all $16 billion - rather than 30% of the $16 billion - is the cost of Pac Bell's plan to upgrade its distribution network:

> "The first seven-year stage will pass more than 5 million homes at a cost of $16 billion." (p. 2)
>
> "Beyond the numbers cited above, it says only that 'beginning immediately, Pacific Bell will invest $16 billion over the next 7 years,' to 'provide Californians with an advanced integrated broadband telecommunications network...' (at 10). The Company further states that 'more than 5 million homes' (at 11) will have access to the advanced network by the end of the decade. If we take 5.5 million homes as a reasonable points estimate of 'more than 5 million,' the average investment per home passed in the four applications would be about $2900." (p. 10-11)

3. In fact, only 30% of Pacific Bell's announced $16 billion capital investment plan for the next ten years is related to deployment for the new network. Roughly $5 billion is for broadband to 5.5 million homes - less than $1000 per home passed. The remainder will be spent on upgrading, replacing and expanding the rest of Pacific Bell's network in California.

4. Interestingly, Dr. Johnson grossly overstates the cost of Pacific Bell's broadband network at $2900 per home passed, even though he cites a study that estimates broadband deployment at $1200 per home:

> "Dr. Reed estimates a total investment cost of $1222 per home passed, in a 'model' community with specified housing density, layout, and other characteristics. The fact that this estimate is less than half the $2900 figure we take for Pacific Bell is accounted for, at least in part, by (a) Dr. Reed's assumptions of very rapid cost-reducing technological advances, which will be unavailable to Pacific Bell in the 1995-1996 time frame, and (b) differences between Dr. Reed's model community and Pacific Bell's real world communities." (p. 12)

5. Having made that fundamental error - overstating Pacific's costs by a multiple of more than three - ALL of Dr. Johnson's empirical analysis and conclusions about the cost and financial viability of Pacific Bell's VDT proposal are wrongly derived from, or premised on the $16 billion mistake.

6. Dr. Johnson grossly overstates the cost of a telephony-only version of Pacific Bell's proposed HFC-RF network architecture:

"A telephony-only network would run to $2850 per home passed ($2900 minus Professor Harris' reported $50 incremental video cost). The amount of $2850 is reduced only by about $86 in common cost ($136 minus $50), or by only 3 percent if video is combined with telephony." (p. 25)

"Unquestionably, Pacific Bell has grossly underestimated its expenses [shown previously in this document]. The reason must lie in the fact that virtually all investment and operating outlays are charged to telephony." (p. 38)

"If the expenses [shown previously in this document] were properly multiplied by a factor of 10, 20, or more, consistent with the disparities noted throughout this affidavit, Pacific Bell's video venture would be exposed as a financial bottomless pit, with no positive cash flow even by the year 2013." (p. 38-39)

7. Dr. Johnson grossly overestimates the incremental cost of video services:

"It is preposterous to believe, however, that incremental cost is as low as $136, much less $50." (p. 9)

"If the four geographical areas of concern are at that average, and if the per-home allocation of video cost is $136, no more than 5 percent of network total investment cost within the four areas will be borne by video dialtone users!" (p. 11)

"As outlandish as it sounds, Pacific Bell is telling us that the cost of adding video dialtone to the integrated network, plus video's share of common cost, amounts to no more than 5 percent of total investment, with telephone ratepayers expected to pick up the remaining 95 percent." (p. 11)

"In column 4, we use the percentage breakdowns from Dr. Reed's data in column 3 to estimate the same cost categories based on the higher $2900 total network cost per home passed. Thus, for example, if video incremental cost runs to 43 percent of the total, as suggested by Dr. Reed's data, the 43 percent estimate applied to the higher estimated network cost of $2900 yields a video incremental cost of $1247 per home passed." (p. 13)

"This estimate of incremental cost alone is more than nine times the amount of $136 for both incremental cost and allocated common cost estimated by Pacific Bell." (p. 14)

"With video and telephone incremental costs respectively of 43 percent and 17 percent of total cost shown in Table 2, 72 percent (43/60) of the $1160 common cost (or $835) is allocated to video, for a total of $2,082 shown in Table 3. This figure is 15 times greater than the estimate of $136 drawn from Pacific Bell's data!" (p. 15)

8. Dr. Johnson grossly overstates the price floor needed to prevent cross-subsidies to video services:

"The salient point is simply this: to avoid cross subsidy, our illustration demonstrates that at least $1247 per home passed must be allocated to video dialtone, (Table 3) compared to the $136 (Table 1) Pacific Bell plans to allocate, on average, across the four geographical areas. Moreover, with common cost allocated as specified by Pacific Bell's proposed rule, a total of $2082 (Table 3), rather than $136, should be charged to video dialtone." (p.16)

"Thus, nearly 10 times the amount Pacific Bell proposes should be assigned to video if telephone users are to be free from subsidy burdens, and more than 15 times that amount should be assigned if common costs are to be added in accordance with Pacific Bell's proposed rule." (p.17) "Isn't the full $16 billion really just for video? On this presumption, we can reasonably ask whether any of the $16 billion should be charged to telephony." (p.20) "The company must be called upon to demonstrate directly why the incremental cost of video is less than the full $16 billion and, hence, why video users should bear anything less than that amount." (p.21)

9. Dr. Johnson wrongly alleges that telephone ratepayers will have to subsidize Pacific Bell's broadband deployment:

"Pacific Bell's figures unmistakably show that the incremental costs to be assigned to video dialtone are only a small fraction -- less than 10 percent -- of any reasonable estimate of video dialtone's actual incremental cost. Incredibly, during the remainder of the decade billions of dollars in subsidy will flow from monopoly telephone ratepayers to support Pacific Bell's proposed $16 billion first stage deployment of its ultimate statewide venture. Without this subsidy, Pacific Bell would not reach a positive cash flow in any of its four initial video dialtone territories (given its own projected revenues) even by the year 2013." (p. 3)

10. Dr. Johnson wrongly alleges that basic telephone rates would increase dramatically to cover the $16 billion investment:

> "We turn to the obviously important question of the likely quantitative effect of Pacific Bell's plan on rates paid by telephone users... [Under one method] consider that capital investment [would] be charged to telephony and to video as shown [previously], based on the total network cost of $2900 per home passed. Under the second, the entire $16 billion investment, from which the $2900 figure is derived, is charged to video dialtone as argued earlier, in recognition of today's telephone infrastructure." (p. 30)

> "Of course, in practice the rise would be spread among subscribers throughout the state. With Pacific Bell's 14.8 million switched access lines, the total subsidy of $16 billion generated within the four geographical areas ($12.21 times 1,310,000 homes) would amount to about $1.08 monthly per access line across the state. As Pacific Bell proceeds with the rest of its $16 billion venture, the burden per access line would be more substantial. With 5.5 million homes, each bearing a subsidy of $12.21 monthly, the statewide monthly charge for each of 14.8 million switched access lines would be about $4.54." (p. 31-32)

> "Consider the impact on residential subscriber rates if Pacific Bell is permitted to allocate to video only its estimate of video incremental cost plus the common cost it proposes to allocate to video, instead of the much higher figures we computed earlier... A difference of $1946 arises between our estimate of $2082 that should be charged to video and the $136 estimated by Pacific Bell. The levelized monthly amount of this difference is $28.69. Again, let's give Pacific Bell the benefit of the doubt by subtracting the $50 it claims would be saved annually ($4.17 monthly) in telephone operating expenses, and also consider that the entire burden on telephone subscribers is confined to those in the affected four geographical areas. In this case, each home would see its basic rate more than triple, from $11.85 to $36.37!" (p. 32)

> "The situation is even more troubling if, with the existing network taken into account, the true video incremental cost is taken to be the full $2900, rather than only a fraction. The levelized monthly cost minus the claimed reduction of $4.17 in operating expense is $38.59. With today's basic rate of $11.85 added, the total of $50.44 would represent a quadrupling of today's basic rate." (p. 32)

11. Dr. Johnson wrongly alleges that Pacific Bell's revenues can not recover the cost of its investment, so the project is not financially viable without subsidies from basic telephone ratepayers:

> "It is fanciful to suggest that residential uses would generate revenues large enough to offset large portions of Pacific Bell's $16 billion proposed first-stage investment." (p. 24) "In this regard, it is important to recognize that Pacific Bell's whole venture is residential-based. When it describes its $16 billion investment, it notes "more than 5 million homes," not a specified number of small and large businesses as well." (p. 24)
>
> "Throughout, we have been forced to calculate only rough approximations to costs from the few bits of information that Pacific Bell has chosen to provide, combined with evidence from outside sources. Even though our estimates will vary from the true magnitudes, they illustrate a deeply disturbing situation: No basis exists for concluding that Pacific Bell's video dialtone services can be made economically viable without massive subsidies from monopoly telephone ratepayers." (p. 44-45)
>
> "If [Pacific Bell] is permitted to load 95 percent of the new network cost onto the shoulders of monopoly telephone ratepayers, it stands to profit handsomely in the video dialtone market where only this small incremental cost [of $50] (and a modicum of common cost) would need to be recovered. With no subsidy, in contrast, Pacific Bell would not reach a positive cash flow for video dialtone even by the year 2013." (p. 45)

12. What these excerpts from his testimony show is that Dr. Johnson's opinions on the whole range of issues before the Commission are based on a false premise. Had Dr. Johnson started from the right beginning, a network deployment cost of less than $1000 per home passed, the correct application of his economic principles would, in fact, support Pacific Bell's application.

Attachment III

Declaration of Richard L. Scholl

My name is Richard Scholl and I declare the following:

I am employed by Pacific Bell as Director - Cost Analysis in the Strategic and Financial Planning Department. In that position I am responsible for identifying costs to Pacific of providing its services. I have had the responsibility since April 1981. I have been Pacific's primary cost of service expert witness since 1984. I have been asked to respond to AT&T's comment in the Allocation of Costs Associated with Local Exchange Carrier Provision of Video Programming Services CC Docket No.96-112.

Total Service Long Run Incremental Cost (TSLRIC) could certainly be used in a formula to allocate shared costs. However the methodology AT&T suggests is not proper. AT&T suggests that "TSLRIC studies should be performed pursuant to an approved TSLRIC model, such as the Hatfield Model proposed by AT&T in its Local Competition Comments" (footnote 8, p.5). AT&T was an active member of the California Telecommunications Coalition which supported the California Public Utilities Commission's adoption of a set of Costing Principles which defined "Total Service Long Run Incremental Costs". The Hatfield Model proposed by AT&T does not adhere to those principles and in no way can it be accurately described as a "TSLRIC" model.

AT&T's proposal for allocation of shared costs does not reflect any economic principle known to us. To illustrate AT&T's departure from economic principle, AT&T's proposed "separate TSLRIC studies are performed for video-capable loop plant, given

that this plant already provides telephony, and for a telephony-capable loop plant, given that this plant already provides video" (p,5) is itself a violation of the principles of defining TSLRIC studies supported by AT&T. Those principles define the TSLRIC of a service as being those costs which would be avoidable if the service is not being provided. Thus, the TSLRIC of telephony would be the costs of providing both the video and telephony service (using a combined network) which would be avoidable if telephony services were not offered. Conversely, the TSLRIC of video service would be the costs of providing both the video and telephony service (using a combined network) which would be avoidable if video services were not offered. The shared costs are those costs which would be avoidable only if neither telephony nor video service was offered.

If TSLRIC were to be used in determining an "appropriate allocation factor", it is appropriate to replicate the LEC decision process which led to the offering of video service. In that decision process, a LEC would choose to offer video service only if it would be at least as well off financially by providing both telephony and video services as it would be by continuing to provide only its telephony service. The cost of providing telephony service should not be increased due to providing video service. The cost attributable to telephone service is limited to the cost of providing service using the technology the LEC would have used for telephony service in the future if video service were not offered. Only costs in excess of that amount are "appropriately allocated" to video services.

The result of applying this principle is that the total "allocated" costs of the existing telephone service is the smaller of:

- the total cost of providing telephony services using a telephony only capable network, or
- the sum of the telephony TSLRIC of providing telephony over the network capable of providing both telephony and video services plus all the shared costs of providing both telephony and video services.

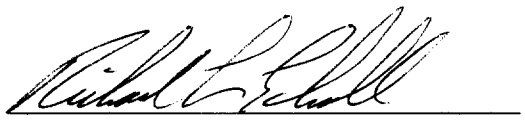
The "allocated" cost of video services is thus the greater of:

- its TSLRIC, or
- the total cost of providing both telephony and video service combined less the cost of providing only telephony service using the telephony-only network.

Any use of TSLRIC studies would require them to be developed and be applied on an individual LEC basis since the divergence of network architectures is significant. Any attempt to average TSLRIC studies of differing architectures would render them meaningless.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on June 11, 1996 at San Ramon, California



Richard L. Scholl

Attachment IV

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Implementation of the Local	)	CC Docket No. 96-98
Competition Provisions in the	)	
Telecommunications Act of 1996	)	

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APPENDIX B

DECLARATION OF RICHARD L. SCHOLL

DECLARATION OF RICHARD L. SCHOLL

My name is Richard L. Scholl and I declare the following:

1. I am employed by Pacific Bell as Director - Cost Analysis in the Strategic and Financial Planning Department. I am responsible for the identification of the cost to Pacific of providing its services. I have had this general responsibility since April 1981. I have been Pacific's primary cost of service expert witness since 1984. On April 17, 1996, I submitted testimony on the Hatfield Cost Proxy Model to the California Public Utilities Commission in Case 95-01-020 (the Universal Service Proceeding). Hearings and cross examination of my testimony concluded on May 17, 1996.

2. Pacific has reviewed the documentation of the Hatfield Model Version 2.2 that was attached to the comments of AT&T Corporation in this proceeding. This latest version of the Hatfield Model contains most of the same errors that I identified in my testimony before the California PUC. In addition, this latest version contradicts statements and testimony provided in California by witnesses representing AT&T.

3. The purpose of this testimony is to:

(a) To discuss the result of my empirical study of the cost estimates produced by the Hatfield Model, which consistently understates the costs of providing network services in California;

(b) To estimate the effect on our revenue of repricing services at their Total Service Long-Run Incremental Costs ("TSLRIC").

I. Empirical Analysis of the Hatfield Model

4. The Hatfield Model consistently underestimates the cash operating expenses required to provide network services. It applies embedded cost factors and incorrectly represents the result as a total service incremental cost study. For many expenses, the Hatfield Model's basic structure is to estimate cash operating expenses by applying factors to incremental investments. Those factors are derived from relationships between embedded investments and current period expenses. This process is wrong for three reasons. First, using this factor approach is inherently flawed in an incremental cost model where the factors are applied against equipment prices. This approach incorrectly assumes that operating expenses such as maintenance expenses will drop if an equipment vendor drops its equipment prices, or will rise if an equipment vendor raises its equipment prices. This is nonsense. It requires no less time for technicians to repair a piece of equipment just because a vendor lowered the price of the equipment. This is precisely the reason that our Cost Proxy Model (the "CPM" described below) does not use this flawed approach. Instead, in the CPM, the user directly inputs all operating expenses. While the Hatfield Model's factor approach may be useful in an *embedded* cost study where embedded investments (the aggregate of all of the investments on a company's books) are relatively stable over time, it has no place in an *incremental* cost study where equipment prices can be quite volatile.

5. Second, the relationship between current operating expenses and *embedded* investments simply has no bearing on the relationship between forward-looking operating expenses and *incremental* investments. Depending on the relationship between embedded investments and the current equipment prices for the newest technology, the Hatfield Model can overstate or understate operating expenses. Since in the Hatfield Model most incremental